

UNCLASSIFIED

AD NUMBER

AD401575

NEW LIMITATION CHANGE

TO

**Approved for public release, distribution
unlimited**

FROM

**Distribution authorized to U.S. Gov't.
agencies and their contractors; Foreign
Government Information; 16 MAY 1962. Other
requests shall be referred to US Library
of Congress, Attn: Aerospace Technology
Division, Washington, DC.**

AUTHORITY

ATD ltr, 2 Dec 1965

THIS PAGE IS UNCLASSIFIED

UNCLASSIFIED

AD

401 575

DEFENSE DOCUMENTATION CENTER
FOR
SCIENTIFIC AND TECHNICAL INFORMATION
CAMERON STATION, ALEXANDRIA, VIRGINIA



UNCLASSIFIED

NOTICE: When government or other drawings, specifications or other data are used for any purpose other than in connection with a definitely related government procurement operation, the U. S. Government thereby incurs no responsibility, nor any obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications, or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use or sell any patented invention that may in any way be related thereto.

401.575

175.11

11487

S/198/62/008/005/006/009
D234/D308

Copy

1,8070

STEP

AUTHOR: (8)

Yaroshek, A. D.

TITLE: (6)

Method and apparatus for testing the quality of external active layers of machine components without destroying them

PERIODICAL: (5)

Akademiya nauk Ukrayins'koyi RSR. Instytut mekhaniky.
Prykladna mekhanika, v. 8, 5, 1962, 552-555

TEXT: (5)

The above method and apparatus have been developed at the Institute of Mechanics, AS UkrSSR. Tests are carried out in weak electromagnetic fields, first to a depth of 15 microns, increasing gradually to 300 microns. The range of frequencies used is $30 \cdot 10^3$ to $4 \cdot 10^6$ c/s. A pick-up moves along the surface of the component and induces eddy currents in the external layer, causing variations in the parameters of the pickup coil. From these variations the presence of inhomogeneities in the layer can be determined. The measuring circuit is described. The measured quantities are the resonance voltage U and the resonance capacity C. The pickup can be

Card 1/2

S/198/62/008/005/006/009
D234/D308

Method and apparatus ...

raised above the surface up to 20 microns at high frequencies and up to 150 microns at low frequencies without affecting the measurement. The error does not exceed 0.5% in many cases and the duration of measurement is 10-15 sec. The whole apparatus consists of a stabilizer, current generator, measuring device for U and capacitor box. It is assembled as an instrument 'Defectoscope D-3 (D-3)'; dimensions are 450 x 290 x 260 mm and weight approximately 15 kg. In addition, four types of pickups have been developed: 1) one having a special core made of carbonyl iron, inside which is placed the inductance coil, this type being used for testing cylindrical components; 2) a similar type used for testing components of complex shape; 3) a small-size pickup whose sensing element consists of a core of nickel-zinc ferrite ϕ -600 (F-600) of a special shape, and a coil; this type is used for testing very small areas; 4) a pickup with directed sensitivity characteristic, producing eddy currents flowing along a rectangle. There are 3 figures.

ASSOCIATION: Instytut mekhaniky AN USSR (Institute of Mechanics, AS UkrSSR)

SUBMITTED: May 16, 1962
Card 2/2